

## Course Announcement Visiting Fellow

### **RYAN D. STEWART**

(Fulbright Visiting Professor in Natural Sciences at the University of Innsbruck; VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY)

**Course title:** Soil Physical and Hydrological Properties

**Term:** Summer 2022, Master's Programme in Ecology and Biodiversity; Master's Programme EMMA; Doctor of Philosophy Programme Biology

### **Course Content:**

In this course you will learn how water and gases move through and interact with soils, including: Infiltration, Water retention, Compaction, Greenhouse gas exchange, Plant water uptake, Evaporation

- An introduction to physical and hydraulic properties that govern the flow of water and chemicals through unsaturated soil
- An overview of physical concepts of hydrological processes that affect age, origin, cycling, and flowpaths of water within watersheds
- Exact and approximate solutions will be presented for processes such as infiltration, runoff, evaporation, root-water uptake, and mass transport
- Students will develop and apply solutions (e.g., HYDRUS, TOPMODEL) to model water, heat and solute movement through the environment.

### **Learning outcome**

Students demonstrate advanced knowledge about soil physics and hydrology in theory and practice. Students are able to apply advanced measure techniques and quantitative methods in soil physical and hydrological properties

**Co-teaching:** Jesse Radolinski, PhD (Department of Ecology)

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